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For moderate and large-sized incomes, information as to their composition as between service income and property income is now available for the statistical student. He will find need for the exercise of considerable acumen in splitting business incomes between services and property.

That the ratio of income from property to total included income increases as the size of incomes increases is an obvious fact that statistics can merely make numerically precise. As a corollary from this fact and with the aid of assumptions with regard to the element of reward for personal services among incomes of very large size, it may be inferred that the number of millionaires in the United States is not much smaller than the number of persons with incomes of \$60,000 a year or more, or in 1917 not much fewer than 14,562. At \$60,000 the proportion of income from personal services and business is about one-third of the total (p. 14). The share of the State of New York in the above stated number of incomes of \$60,000 or more is 4,793 (pp. 48-50).

The data of corporate returns offer a variety of statistical difficulties and possibilities that should attract the analytical student, although for the student of corporate earnings and business conditions the data presented will not be sufficient. Some information is found in the report under review regarding income of Americans from foreign investments and vice versa. Details by kinds of industry from which corporation incomes are derived are presented and should afford much material of statistical interest. It is scarcely necessary to mention the great extent to which the presentation of data separately by states is carried, as this is to be expected in United States Government reports.

This document devoted to statistics of income is the initial report of its kind. It should be the first of a regular series of such reports and the fiscal as well as the public interest in statistics of this nature warrant any reasonable extension of the scope of the compilation and analysis. Fiscal and practical interests do not preclude but are rather dependent upon the presentation of the facts that are of interest to the scientific statistician.

G. P. WATKINS.

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*Business Research and Statistics.* By J. George Frederick. New York, D. Appleton & Co., 1920. Pp. 333.

Mr. Frederick's aim, as stated in the preface of his book, is both to direct the attention of business executives to the value of business research and to correct the "narrow, circumscribed and uncreative attitude" of the average research worker or statistician, "unacquainted with practical business aim and necessity." The author has added a new set of classifications of statisticians, namely, statisticians, hack statisticians, and business research statisticians who are only "partly professional," being more concerned in advancing the fortunes of their business than winning fame among their professional colleagues.

The book makes no contribution to method in business research, confining itself almost entirely to an enumeration of questions and problems to which business research should address itself, and to the discussion of their practical value. At first glance, therefore, one would say that statisticians would derive little benefit from its perusal. There are, however, several features of the book that are worthy of attention by professional statisticians.

In the first place, the book indicates the development taking place in the field of commercial research under private auspices, which is a matter of considerable significance. The professional statistician, to use the author's phrase, is probably unaware of the nature and extent of this research work which has come about in response to a specific need on the part of business organizations. As the author repeatedly states,

such business research deals with specific questions raised by the practice of the business technique and is emphatically practical, being concerned with finding answers to those questions. Its utilitarian character may incline some persons to dismiss it as a mere application of statistical method to money-making and therefore of little scientific value. But such a dismissal would be to ignore several exceedingly important facts which should not be neglected. Either this business research will continue to be only "partly professional," or it will develop into a scientific inquiry into business methods and activities. If ever it is to become scientific, the professional statisticians must turn their attention to it and by criticism and the development of better methods make it so. And when regarded properly, it is impossible to see how they can fail to devote more time and consideration to business research, for it is through such business research that the approach must be made to many economic studies. The data for these studies are collectible only through business organizations and trade associations, since business men will not cooperate with public or academic agencies of study (unless they see some benefit to be derived therefrom), but work with their own agencies. Also, the financing of these economic studies is possible now only through business organizations.

Furthermore, the character of the data being and to be collected for business research is such that the professional statistician cannot afford to neglect this field. Sooner or later the trained statistician will have to concern himself with the larger aspects, at least, of the question raised by the practice of the business technique. For what the business man is seeking is to control economic activities and he demands of business research the answers to the questions of how to do it. Although this interest in research may appear as just money getting, yet in reality the research is more than that: it is an attempt to exercise direction and control over economic affairs through the use of intelligence, an enterprise which must command the allegiance of every statistician who is not wholly blinded by the traditional formulae of economic theory. Even if the professional statistician questions the self-interest of the business man in commercial research, he cannot remain indifferent to the questions it addresses. The questions of demand and its variations, of prices and their fluctuations, of production and distribution are all relevant to the statistical economist. And it cannot be too often emphasized that progress in science has been more rapid when attempts were made to solve specific problems than when complete theoretical structures have been sought.

For the economist the book is of interest since it discusses a variety of questions on or beyond the "frontier of economic theory," questions concerning economic activity which are entirely ignored by the text-books of economics. Until economic theory, predicated upon the concept of a free play of economic forces, reconciles the existence of the large measure of control exercised by business men with its free play of forces, its analysis must be deficient.

Therefore, it is safe to say that although technically the book makes no contribution to statistics as such, it offers a challenge to both statisticians and economists. It is full of inconsistencies, many of which are amusing. For example, in speaking of the labor problem, the author remarks that "business research, *unbound by economic theory*, and trained to think of facts as they are today, would unquestionably have uncovered this grave error long ago (of regarding labor as a commodity)." Yet in discussing the development of manufacturing by wholesalers and jobbers (instead of sticking to their function of distributing only), the author speaks of this as a "cancer spot in the distributive situation today," implying that it is contrary to economic theory and therefore unsound for a wholesale business to develop its own source of supply. Again he says, "the tendency of the larger (distributive) units to

cut prices (because they can afford it through securing quantity prices) is a highly unfair and uneconomic proceeding," implying that economic proceedings must favor the smaller unit, probably in order to preserve the competition and the individual initiative dear to the economist's heart.

Also, the author's insistence upon the advisability of having business research done by outside agencies instead of by a private staff in the business implies that scientific work cannot be done by the private staff, which is absurd when one considers the number of chemists, physicists, and engineers now attached to business. It appears too much like a sales argument, other examples of which mar the book.

On the whole the book is more for the business man than for the professional statistician who will, nevertheless, find it valuable as serving to acquaint him with the character of the problems business is studying today, about which he must sooner or later know more than he does.

LAWRENCE K. FRANK.

New York City.

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*Budgets of Families and Individuals of Kensington, Philadelphia.* By Esther Louise Little, A.M., and William Joseph Henry Cotton, A.M. A thesis for the Degree of Doctor of Philosophy at the University of Pennsylvania. Lancaster, Pa. The New Era Printing Co., 1920. Pp. 273.

Since the cost-of-living investigations made by Engels, it has been customary to classify such studies as extensive or intensive, according to the number of cases included. Whether or not such a differentiation is now justifiable, this report will be classed as an intensive study, as it includes only 34 budgets of which 23 are of families, 9 are of unmarried women, and 2 are of unmarried men. The budgets are from actual records kept day by day for a year or a large part of a year, during 1913 and 1914, that is, just before the beginning of the recent upheaval in prices. The investigation also includes a study of incomes, and standard budgets are drawn up for textile-mill workers which the authors designate as a "fair standard of living," the descriptive title thus varying from other such designations as the "minimum-of-subsistence budget" or the "health-and-decency budget."

The study of only a few cases has the advantage of enabling the investigators to know them well. This knowledge the authors have achieved and the basic material is presented in considerable detail, both in summaries and in family histories. The presentation is interesting to read. The accounts are very human. The lists of expenditures for clothing by items, for instance, make a vivid impression. An excellent feature is the showing of the amount of income week by week in curves for each individual. These curves are by no means smooth and the frequent deep downward slopes from the rather low level seem to have almost terrible significance. The details of some of the miscellaneous expenditures are very welcome, as this part of the budget is frequently neglected. The general pattern of the study is somewhat like those of the well-known investigations of Chapin and of More. And it is important to have a few more carefully kept records to add to the not too large existing stock.

Although the fulness of the exposition of the original data is admirable, there are some shortcomings in certain aspects of method. The intensive study of a few cases is often praised for the accuracy attained, but it also presents abundant opportunities for making improvements in method and for obtaining information difficult to obtain when a larger number of cases are studied less thoroughly. Have the authors utilized